STAT 651: Statistical Theory I

Lectures: MWF 10:30–11:30 Gruening 309
Final exam: 10:15–12:15, Fri Dec. 17, Gruening 309

Instructor: Zepu Zhang.

zzhang6@alaska.edu; 306A Chapman, 474-7605. Mail box: Chapman 101.

Office Hours: MWF 2:30–3:30, or by appointment.

Textbook:

Required:
Statistical Inference, 2nd edition, by George Casella and Roger Berger, 2002, Duxbury.

Reference:
Probability and Statistical Inference, by Nitis Mukhopadhyay, 2000, Marcel Dekker.

Blackboard: Use the Blackboard site for this course to access schedule, announcements, lecture notes, homework assignments and solutions, grades, and other related materials. Some documents may see small modifications/updates after first posting.

Prerequisites: Math 202X, Math 314, previous statistics course, or permission of instructor. In particular, this course will put to use a great deal of the calculus you have learned in your earlier coursework.

Goals and expected learning outcomes: Students will gain an understanding of basic probability theory, random variables and their properties, random samples, and convergence concepts. Throughout, emphasis will be placed on reading and writing rigorous mathematical proofs, as well as understanding technical writing in statistics. Students will be introduced to simulations by the programming language `R`.

Computation and software: This is a theory class and so computation will not play a large role. However we will use simulation to illustrate certain concepts. Students will use `R` which is available in the computer lab in room 407 of the Bunnell building and in the math lab in room 305 of the Chapman building. You may also download `R` for free at `www.r-project.org`. Learning to use `R` is not part of this course; but the instructor can provide help if needed.

Lecture notes: Lecture notes serve as outlines and pointers. They are not meant to be a polished reader. Unless otherwise announced, the notes mention all required topics, and textbook topics not mentioned in the notes are less important. It may happen that certain content of the notes do not get enough discussion time in the lectures; that content is still required material.

Homework: I will use Blackboard (`classes.uaf.edu`) to assign readings from the text and exercises. Assignments should be submitted by 5pm on the date due. I generally do not accept late homework. If you will not be able to complete an assignment on time, see me *before* the due date to make arrangements. Permitted late submission will lose partial credit. I encourage you to discuss homework problems with other students, as well as with me. However the work you turn in must be your own.

Homework should be typeset/word-processed (preferred) or hand-written neatly. Turn in hard copies only. Remember to number the pages and use a stapler.

When writing up your homework, please use complete sentences. State each problem (briefly, if not in full detail) before solving it; this is a good habit to get into, and it makes it possible for you to read and make use of your homework later on. When proving facts, be sure to state the assumptions, present your argument in a logical order, and point out where you make use of the various assumptions. Properly cite any theorems or definitions used.

Include relevant computer output with your solutions. Decorate your `R` output—with circles and arrows and a few words point out where your answer is.

Grading policy:

There will be two in-class hour-long midterm exams and one two-hour final exam. Coverage of each exam will be announced later; the final exam will in principal cover the entire course.

The exams will be closed-book. You may use notes *prepared by yourself* on two sheets of $8\frac{1}{2} \times 11$ inch paper (both sides). You may not use a computer in the exams. You may use a calculator. (It must be a calculator only; it must not be a device that can store notes.)

In all homework and exams, messy presentation and incomplete/unclear writing, as determined by the grader, may cost partial credit.

In all homework and exams, intermediate steps that show your understanding of the topic and procedure are as important as the final answer. Both the procedure and the final answer carry credit.

Your final grade will be calculated based on the following proportions:

Homework	30%
Midterms	40% (20% × 2)
Final	30%

Grading scale: A (honor grade): 90–100; B (outstanding): 80–89.99; C (average): 70–79.99; D (below average): 60–69.99; F (failure): 0–59.99.

Ethics: Studying together, and getting study assistance from a tutor, is allowed and encouraged. Copying someone else's work and representing it as your own is plagiarism. Plagiarism and other forms of cheating in homework and exams may result in a 0 (zero) score for the homework/exam involved.

Please read "Student Code of Conduct" on pages 117–118 of the *Class Schedule*, and policies of the Department of Math and Stats at www.dms.uaf.edu/dms/Policies.html.

Disability Services: If you have a physical handicap or learning disability, please make me and the Office of Disabilities Services (474-7043) aware of the situation so that reasonable accommodations can be made.

Withdrawal: I may withdraw any student from class who (1) misses an exam without a valid reason OR (2) misses three homework assignments.